

CLAIMS

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1. A polymeric twist tie comprising;

a thermoplastic monofilament having an oriented characteristic produced by stretching a preheated monofilament through a heated volume reducing die,

an extruded thermoplastic coating enclosing said monofilament, and

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at least one grippable extension integral with the coating extending outwardly therefrom such that the tie may be twisted upon itself with the monofilament retaining its basic configuration and the wings stretching and bending to conform within a coupled twist.

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2. The polymeric twist tie as recited in claim 1 wherein said at least one grippable extension comprises a pair of opposed wings.

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3. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic monofilament and said thermoplastic coating are dissimilar in basic density and melt index.

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4. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic monofilament and said thermoplastic coating, are dissimilar in basic thermoplastic morphology.

5. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic monofilament further comprises a round shape having a diameter of from .022 to .042 inches (.056 to .107 cm).

6. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic monofilament further exhibits a dead fold angle no greater than 10 degrees when said monofilament is folded contiguously in half, and, when relaxed retaining no more than 10 degree angle for a minimum period of three minutes.
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7. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic monofilament is a thermoplastic material that is orientable.
8. The polymeric twist tie as recited in claim 1 wherein said oriented thermoplastic
- 10 monofilament is high density polyethylene material.
9. The polymeric twist tie as recited in claim 8 wherein said high density polyethylene monofilament having a characteristic achieved by preheating the monofilament to at least 250 degrees F. (121.1 degrees C.) and stretched through a tapered die preheated to
- 15 at least 250degrees F (121.1 degrees C.) decreasing its original area greater than 5 times.
10. The polymeric twist tie as recited in claim 1 wherein said extruded coating and at least one grippable extension further comprises a low density polyethylene.
- 20 11. The polymeric twist tie as recited in claim 10 wherein said low density polyethylene extruded coating and wings comprises a coating on the monofilament and wing extensions produced with said low density polyethylene under heat and pressure.
12. The polymeric twist tie as recited in claim 1 wherein said extruded thermoplastic
- 25 coating on the monofilament has a thickness of from .001 to .010 inches (.0025 to .025 cm.)
13. The polymeric twist tie as recited in claim 1 wherein said opposed integral thermoplastic wings have a thickness of from .002 to .009 inches (.005 to .023 cm.)

14. The polymeric twist tie as recited in claim 1 wherein said twist tie has an overall width of from .125 to .250 inches (.318 to .635 cm).

- 5 15. A polymeric twist tie comprising;
- at least one oriented thermoplastic monofilament having dead fold properties,
 - an extruded thermoplastic coating circumferentially enclosing said thermoplastic monofilament, and
 - said coating including a pair of opposed wings extending from either side of said
- 10 monofilament such that the tie may be twisted upon itself with the monofilament retaining its basic configuration and the wings stretching and bending to conform within a coupled twist.

16. The polymeric twist tie as recited in claim 15 wherein said dead fold properties
- 15 exhibit a dead fold angle no more than 10 degrees when said monofilament is folded in half contiguously, and, when relaxed retaining this no more than 10 degree angle for a minimum period of three minutes.

17. The polymeric twist tie as recited in claim 15 wherein said oriented monofilament is
- 20 high density polyethylene and said thermoplastic coating is low density polyethylene.

18. A polymeric twist tie comprising;
- an extrusion of oriented thermoplastic monofilament encased in a thermoplastic coating, and

a pair of opposed wings simultaneously formed with the coating, such that the tie may be twisted upon itself with the monofilament retaining its basic configuration and the wings stretching and bending to conform within a coupled twist.

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19. The polymeric twist tie as recited in claim 18 wherein said oriented monofilament is pure natural high density polyethylene and said thermoplastic coating is pure natural low density polyethylene.

10 20. A method of manufacturing a polymeric twist tie, including the steps of:
providing a thermoplastic monofilament;
orienting the monofilament material to decrease its material memory so that it has an increased tendency to maintain a deformed shape when force is applied to it;
enclosing the monofilament with a coating having a relatively softer feel than the
15 oriented monofilament material.

21. The method of Claim 20, further including simultaneously forming during the enclosing step a pair of opposed wings integral with the coating.

20 22. The method of Claim 20, in which said orienting step includes pre-heating the monofilament and stretching it through a heated, volume reducing die.

23. The method of Claim 20, in which said step of enclosing the monofilament with a coating is performed contemporaneously with said orienting step.

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24. The method of Claim 20, in which said step of enclosing the monofilament with a coating is performed after said orienting step.

25. The method of Claim 20, including using high density polyethylene for said thermoplastic monofilament, and using low density polyethylene for said coating, in which said high density polyethylene and said low density polyethylene are dissimilar in density, melt index and basic thermoplastic morphology.

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26. A thermoplastic monofilament having an oriented characteristic produced by stretching a preheated monofilament thorough a heated volume reducing die.

27. A polymeric twist tie comprising:

10 an oriented thermoplastic monofilament having bending characteristics similar to metal wire,

a thermoplastic coating enclosing said monofilament , said coating including at least one extension formed at least substantially along the length of said monofilament ,

15 said coating being non-oriented and relatively softer to the touch than said monofilament,

said coating configured to facilitate a user manipulating said twist tie into a desired bent configuration and said monofilament tending to stay bent into said configuration upon the release of force by the user.

20 28. A high density polyethylene monofilament formed by preheating the monofilament to at least 250 degrees F. (121.1 degrees C.) and stretched through a tapered die preheated to at least 250degrees F (121.1 degrees C.) decreasing its original area 6.25 times.

25 29. A high density polyethylene monofilament formed by preheating the monofilament to approximately 250 degrees F. (121.1 degrees C.) and stretched through a tapered die preheated to approximately 250 degrees F (121.1 degrees C.) decreasing its original area greater than 5 times

30. A polymeric twist tie having a low density polyethylene extruded coating including wings formed integrally with said coating, said coating covering an oriented high density polyethylene monofilament.